

PHOTOPHYSICS INC.  
1601 STIERLIN RD.  
MTN. VIEW, CALIF. 94040



THEO H NELSON  
PRES  
NELSON ORGAN  
BOX 3  
SCHOOLEY'S KTN NJ07870

• 5 18 71

June 4, 1971

Thank you for visiting us at the Spring Joint Computer Conference in Atlantic City. I am enclosing the information you requested on our modular product line utilizing the unique Quantafax <sup>TM</sup> process.

I hope that the enclosed material will assist you in evaluating how to make more effective use of your existing resources or allow you to plan around this new cost-effective concept.

We will contact you after you have had an opportunity to review it to see if we may answer any questions you may have.

In the meantime, if we can be of any help to you, please call me. I look forward to seeing you in the near future.

Sincerely yours,

PHOTOPHYSICS, INC.



Richard Russell  
Vice President/Marketing

RR/sg  
Encs.

**NO POSTAGE NECESSARY IF MAILED IN UNITED STATES**

**BUSINESS REPLY MAIL**

**POSTAGE WILL BE PAID BY**

**PHOTOPHYSICS INC.**

**1601 STIERLIN RD.**

**MOUNTAIN VIEW, CALIFORNIA 94040**

Name: \_\_\_\_\_ Title \_\_\_\_\_

Company: \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

THANK YOU FOR YOUR INTEREST IN PHOTOPHYSICS. THE INFORMATION YOU REQUESTED IS ENCLOSED. TO DETERMINE HOW WE CAN BEST SERVE YOU, PLEASE SUPPLY THE INFORMATION REQUESTED BELOW.  
INFO. SENT: \_\_\_\_\_

☐ YES PLACE MY NAME ON YOUR MAILING LIST FOR FUTURE PRODUCT INFORMATION.  
☐ NO

YOUR APPLICATION: \_\_\_\_\_ INVENTORY SYSTEMS \_\_\_\_\_ EDUCATIONAL PROGRAM  
\_\_\_\_\_ RESERVATION SYSTEMS \_\_\_\_\_ TIME SHARE SERVICE  
\_\_\_\_\_ MEDICAL APPLICATION \_\_\_\_\_ OTHER  
\_\_\_\_\_ FINANCIAL ANALYSIS \_\_\_\_\_

PRESENT SYSTEMS:

TERMINALS USED PRESENTLY:

\_\_\_\_\_ NONE  
\_\_\_\_\_ TELETYPE, MODEL \_\_\_\_\_  
\_\_\_\_\_ TYPEWRITER TERMINAL, MODEL \_\_\_\_\_  
\_\_\_\_\_ CRT TERMINAL, MODEL \_\_\_\_\_  
\_\_\_\_\_ OTHER \_\_\_\_\_

HARD COPY OBTAINED BY:

\_\_\_\_\_ NONE OBTAINED  
\_\_\_\_\_ LOCAL TELETYPE OR TYPEWRITER  
\_\_\_\_\_ REMOTE TELETYPE OR TYPEWRITER  
\_\_\_\_\_ OTHER \_\_\_\_\_

COMPUTER SYSTEM USED:

\_\_\_\_\_ IBM 360 MODEL \_\_\_\_\_  
\_\_\_\_\_ OTHER \_\_\_\_\_  
\_\_\_\_\_ TIMESHARE SERVICE \_\_\_\_\_

COMMUNICATION:

\_\_\_\_\_ TELEPHONE LINE \_\_\_\_\_ DIRECT WIRE

NUMBER OF TERMINALS REQUIRED \_\_\_\_\_

IS YOUR APPLICATION:

\_\_\_\_\_ IMMEDIATE \_\_\_\_\_ FOR PROBABLE FUTURE REQMT. \_\_\_\_\_ FOR FUTURE REFERENCE.

IF YOU WOULD LIKE AN APPLICATIONS ENGINEER TO ARRANGE A VISIT, PLEASE NOTE YOUR PHONE NUMBER BELOW.

AREA CODE \_\_\_\_\_ NUMBER \_\_\_\_\_ EXT. \_\_\_\_\_

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**PHOTOPHYSICS INC.**

**1601 STIERLIN RD.**

**MOUNTAIN VIEW, CALIFORNIA 94040**



# In 5 seconds from your command, a paper copy of your display just like this:

3 OPERATORS ON OUR TERMINALS REPLACE  
4 OPERATORS ON YOUR TERMINALS!

TO FIND OUT HOW, CLIP THIS  
ACTUAL SIZE COPY FROM OUR CRT,  
FILL IN DETAILS AND MAIL TO:

PHOTOPHYSICS, 1601 STIERLIN RD.,  
MOUNTAIN VIEW, CALIFORNIA 94040

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_  
COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY/STATE/ZIP \_\_\_\_\_

3 OPERATORS ON OUR TERMINALS REPLACE  
4 OPERATORS ON YOUR TERMINALS!

TO FIND OUT HOW, CLIP THIS  
ACTUAL SIZE COPY FROM OUR CRT,  
FILL IN DETAILS AND MAIL TO:

PHOTOPHYSICS, 1601 STIERLIN RD.,  
MOUNTAIN VIEW, CALIFORNIA 94040

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_  
COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY/STATE/ZIP \_\_\_\_\_

PHOTOPHYSICS 45 DATA TERMINAL



PHOTOPHYSICS

For real-time information on our fully modular line of 10 terminals, phone:  
SAN FRANCISCO: (415) 969-9500 • LOS ANGELES: (714) 557-2822  
CLEVELAND: (216) 283-6306

## WHY DO THREE OPERATORS ON PHOTOPHYSICS '45' TERMINALS REPLACE FOUR ON YOUR PRESENT TERMINAL?

Because the '45' terminals combine the advantages CRT terminals have over hard copy terminals (greater speed of data receipt and transmission and data entry) with the advantages hard copy terminals have over CRT terminals (a paper copy of the transaction). Unlike other hard copy terminals, however, the Photophysics '45' delivers hard copy only on demand (of the local keyboard or the remote computer) so there is no unwanted paper to throw away; delivers it in cut form so it does not have to be separated from a continuous form roll, and delivers it in only five (5) seconds (2 seconds each for additional copies). The following example illustrates how this unique combination of high speed data receipt and transmission, fast hard copy, and ease of data entry can reduce the number of operators, terminals, lines, and central computer hardware necessary to handle a given volume of transactions.

<u>Job Description</u>	<u>TTY ASR 33 or 35</u>	<u>2400 Baud CRT coupled with ASR 33 or 35</u>	<u>Photophysics '45' Model 40 or 44</u>
Enter 120 characters @ 10,800 keystrokes per hour	40 secs	40 secs	40 secs
Transmit	0 secs	.5 secs	.5 secs
Receive 840 characters	84 secs	3.5 secs	3.5 secs
Copy 50% of pages received (average of 420 characters	0 secs	42 secs	2.5 secs
Total time per transaction	124 secs *****	86.0 secs *****	46.5 secs *****
# of transactions per hour per terminal	29 *****	42 *****	80 *****
# of operators for volume of 80 trans- actions per hour	3	2	1

Obviously, the savings realized will vary with the job characteristics. Table I summarizes for different page (record) lengths, the speed of data receipt and the wait time per page received for the most commonly installed hard copy devices and the various hard copy CRT models of the Photophysics '45' series. It can be used to estimate operator man-hour savings for other cases.



If your need for hard copy has forced you to use slow hard copy terminals (8 to 60 characters per second) rather than fast CRT terminals (120 to 240 characters per second), you no longer have to sacrifice speed for hard copy. If you are using fast CRT terminals now but sacrificing hard copy, you no longer have to sacrifice hard copy to get speed. If you are using fast CRT terminals with slow (i. e. Teletype) or inconvenient (i. e. , high speed shared printer) hard copy devices, you can substitute a hard copy device that matches your CRT in speed (200 characters per second) and convenience (can be integral to the CRT and readily at hand).



TABLE I

<u>Type of Hard Copy Terminal</u>	<u>Speed of Data Receipt - Char. Per Second</u>	<u>Speed-Max No. 120 Char. Pages/ Hr. Received</u>	<u>Speed-Max No. 480 Char. Pages/ Hr. Received</u>	<u>Speed-Max No. 960 Char. Page/ Hr. Received</u>	<u>Speed of Hard Copy Delivery Per Page</u>	<u>Wait-T Per 120 Char. P Receiv (in secs</u>
Teletype ASR 33 or 35	10	300	75	37.5	2 secs (tear off)	12 + t off (2 = 14 s
IBM 2740	15	450	112.5	56.25	2 secs (tear off)	8 + te off (2 = 10 s
Photophysics '45' Models 20 and 24	120	3,600	900	450	5 secs (in cut form)	1 + de (5 sec 6 secs
Photophysics '45' Models 40 and 44	240	7,200	1,800	900	5 secs (in cut form)	.5 + de (5 sec 5.5 se



THE PHOTOPHYSICS '45' SERIES  
OF COMPUTER TERMINALS OFFERS THE FOLLOWING

- 1) The first truly MODULAR line of alphanumeric CRT terminals: 10 models of keyboard/displays, keyboard/displays with integral hard copy, display copiers that can be dedicated to a single keyboard/display or shared by up to 8 keyboard/displays; compatible with software or hardware that can handle IBM 2260, IBM 2265, Teletype ASR 33 or Teletype ASR 35.
- 2) As part of that line, the only DISPLAY PLUS SELECTIVE HARD COPY computer terminal which combines in a single, compact, desk-top, quiet, low-cost unit the advantages of a CRT (speed of data receipt and transmission and of data entry) with those of a hard copy terminal (a paper record of the display when required, delivered in cut form in two to five seconds from command by the keyboard or the computer).
- 3) The best PRICE/PERFORMANCE of any method of obtaining hard copy from a display - 19.0 characters per second per \$100 of unit quantity purchase price. No other hard copy device selling for under \$5,000 can even come close to that price/performance. Also, the best price/performance of any keyboard/hard copy terminal - 2.2 characters per second per \$100 of unit quantity purchase price. Finally, unexcelled price/performance among the CRT terminals on the market - \$2,580 to \$4,650 purchase price depending on quantity and model, \$96 to \$172 per month lease rate depending on model and length of contract.
- 4) The greatest man/machine EFFICIENCY available due to its unique combination of high speed data receipt and transmission, fast hard copy, and ease of data entry. The following example illustrates how this unique combination of features can reduce the number of operators, terminals, lines, and central computer hardware necessary to handle a given volume of transactions.

4. The greatest man/machine EFFICIENCY available due to its unique combination of high speed data receipt and transmission, fast hard copy, and ease of data entry. The following example illustrates how this unique combination of features can reduce the number of operators, terminals, lines, and central computer hardware necessary to handle a given volume of transactions.

<u>Job Description</u>	<u>TTY ASR 33 or 35</u>	<u>2400 Baud CRT coupled with ASR 33 or 35</u>	<u>Photophysics '45' Model 40 or 44</u>
Enter 120 characters @ 10,800 keystrokes per hour	40 secs	40 secs	40 secs
Transmit	0 secs	. 5 secs	. 5 secs
Receive 840 characters	84 secs	3. 5 secs	3. 5 secs
Copy 50% of pages received (average of 420 characters)	0 secs	42 secs	2. 5 secs
Total time per transaction	124 secs	86.0 secs	46. 5 secs
# of transactions per hour	29	42	80
# of operators for volume of 80 transactions per hour	3	2	1

5. Strong SUPPORT behind the terminal. Textron's Oregon Technical Products manufactures and warrants the terminals for Photophysics, allowing us to offer a 60 day delivery schedule, and Honeywell maintains them in the U.S.

6. The highest RELIABILITY available due to its advanced MOS integrated circuit technology, its microswitch keyboard, TV monitor quality tube, and its ability to operate as an independent terminal (no shared buffers or shared controllers whose failure can bring down whole groups of terminals at once).



# 45



## CRT DATA TERMINAL SPECIFICATION DATA

MODEL 64

Photophysics '45', Model 64, is the desk top CRT data terminal with a CRT display and solid state keyboard. It is part of the first truly modular interactive terminal line, the Photophysics '45' series of display and keyboard, display and copier and display and keyboard with integral copier terminals. It is compatible with Teletype ASR 33 or 35.

### DISPLAY

<b>SCREEN SIZE:</b>	9" diagonal*	<b>CHARACTER GENERATION:</b>	5 x 7 dot matrix
<b>SCREEN TYPE:</b>	High-resolution TV Monitor	<b>REFRESH MEMORY:</b>	MOS shift register (6,720 bits)
<b>DISPLAYABLE CHARACTERS:</b>	960	<b>SCAN METHOD:</b>	Digital raster with 60 HZ refresh rate
<b>CHARACTERS PER LINE:</b>	80	<b>CODE:</b>	7 bit US ASCII
<b>NUMBER OF LINES:</b>	12	<b>CURSOR:</b>	Non-destructive, blinking
<b>CHARACTER SIZE:</b>	0.075" x 0.40" adjustable		

### KEYBOARD

A detachable, solid-state keyboard with 78 keys provides 64 displayable characters and 32 displayable control codes, 17 function keys, and 12 editing keys.

\*Viewing area equivalent to 12" commercial T.V. tube.



## STANDARD CONTROLS AND EDITING FEATURES

- |                          |                                   |                          |
|--------------------------|-----------------------------------|--------------------------|
| 1. 4-way cursor position | 10. Delete character              |                          |
| 2. Cursor home           | 11. Frame roll                    |                          |
| 3. Carriage return       | 12. 110, 150, 300, 600, 1200 baud | } switch<br>} selectable |
| 4. Line feed             | 13. Half or full duplex           |                          |
| 5. Clear page            | 14. EIA RS 232 B or C interface   |                          |
| 6. Clear line            | 15. Displayed control characters  |                          |
| 7. Delete line           | 16. Semi-format control           |                          |
| 8. Repeat character      | 17. Block message transmit        |                          |
| 9. Insert character      | 18. Split screen                  |                          |

## OPTIONAL CONTROLS AND EDITING FEATURES

1. Insert line
2. Parity checking

## COMMUNICATION INTERFACE

EIA RS 232 B or C for serial data transmission to any acoustic coupler, data set, or modem having this standard interface. Compatible with ASR 33 or 35 teletype.

## POWER REQUIREMENTS

**POWER:** 115 volts, 60 cycles; 150 watts maximum

## PHYSICAL CHARACTERISTICS

**WEIGHT:** 45 pounds

**SIZE:** Display: 12" wide, 14" high, 20½" deep  
Keyboard: 16½" wide and 10½" deep  
Display and Keyboard: 29¾" deep (Table space: 28½")

# 45



MODEL 10

## CRT DATA TERMINAL SPECIFICATION DATA

Photophysics '45', Model 10, Display/Copier utilizes the unique Quantafax™ (patent pending) electro-photographic, high speed, hard copy process developed by Photophysics to provide a 9" diagonal display with integral hard copy capability in a single, compact unit. The display image can be recorded on paper in 5 seconds (2 seconds for additional copies of the same or different displays) without external attachments to obscure the display. The Photophysics '45', Model 10, offers copy of either continuous tone images or alphanumeric information. The Model 10 can be dedicated to a single keyboard/display terminal, shared by up to 16 keyboard/display terminals or used as a closed circuit TV monitor/copier.

### COPY CHARACTERISTICS

**COPY SIZE:** 2½" x 3½" field on 5" x 4½" paper.

**PAPER QUALITY:** Paper used is inert, white, and has the qualities of bond paper. It can accept pen or pencil notes and has a life of over 20 years.

**PRINT QUALITY:** Electrophoretic toner is used to obtain high quality carbon black characters of alphanumeric displays as well as continuous tone reproduction of TV images. Print is archival. Resolution in excess of 10 line pairs per millimeter is achieved.

### COPY SPEED

**INITIAL COPY:** 5 seconds after pressing "print" button.

**ADDITIONAL COPIES:** At 2 second intervals, additional copies of the same or different display may be produced.

## PAPER AND TONER CAPACITY

*PAPER:* A 500 ft. roll of 5" wide paper provides 1,200 prints without reloading.  
*TONER CAPACITY:* 1 quart

## ELECTROPHOTOGRAPHIC SYSTEM

A high speed electrophotographic process utilizing a large area, uniform photoconductor and associated optics provides high quality prints in very short exposure times. A negative of the CRT image is produced to create black characters on a white background.

## MONITOR DISPLAY

*DISPLAY TUBE:* 9" diagonal high-resolution kinescope. Other sizes available upon request.

## INTERFACE

*VIDEO SIGNAL:* EIA RS 170 or other video sources

## POWER AND PHYSICAL CHARACTERISTICS

*POWER:* 115 volts, 60 cycles, 150 watts  
*WEIGHT:* 80 pounds  
*SIZE:* 21" wide, 14" high, 22½" deep (Table space: 19½")



# 45



MODEL 40

## CRT DATA TERMINAL SPECIFICATION DATA

Photophysics '45', Model 40, is the only interactive terminal available that combines in a single, compact unit the speed of data presentation and ease of data entry of a CRT terminal with the convenience and immediate availability of paper copy of a hard copy terminal. The 5" x 4½" copy of the display can be produced on command from the keyboard or on command from a remote computer in 5 seconds (2 seconds for additional copies of the same or different displays) for less than 1¢ per copy.

### HARD COPY OUTPUT

<b>COPY SIZE:</b>	2½" x 3½" field on 5" x 4½" paper. A standard display consisting of 25 lines of 40 alphanumeric characters will appear as 10 point capital characters on the copy.
<b>PAPER QUALITY:</b>	Paper used is inert, white, and has the qualities of bond paper. It can accept pen or pencil notes and has a life of over 20 years.
<b>PRINT QUALITY:</b>	High quality carbon black characters are produced with electrophoretic toner. Print is archival. Resolution in excess of 10 line pairs per millimeter is achieved.
<b>COPY SPEED:</b>	Initial copy is delivered 5 seconds after pressing "print" button or receipt of remote command. Additional copies of same or different display may be had at 2 second intervals.
<b>PAPER CAPACITY:</b>	A 500 ft. roll of 5" wide paper which provides 1,200 copy prints without reloading.
<b>TONER CAPACITY:</b>	1 quart
<b>ELECTROPHOTOGRAPHIC SYSTEM:</b>	A high speed electrophotographic process utilizing a large area, uniform photoconductor and associated optics provides high quality prints in ½ second exposure time. A negative of the CRT image is produced to create black characters on a white background.



## DISPLAY

<i>SCREEN SIZE:</i>	9" diagonal*	<i>CHARACTER GENERATION:</i>	5 x 7 dot matrix
<i>SCREEN TYPE:</i>	High-resolution TV Monitor	<i>REFRESH MEMORY:</i>	MOS shift register (8,000 bits)
<i>DISPLAYABLE CHARACTERS:</i>	1,000	<i>SCAN METHOD:</i>	Digital raster with 60 HZ refresh rate
<i>CHARACTERS PER LINE:</i>	40	<i>CODE:</i>	7 bit US ASCII
<i>NUMBER OF LINES:</i>	25	<i>CURSOR:</i>	Non-destructive, blinking
<i>CHARACTER SIZE:</i>	0.125" x 0.150" adjustable		

## KEYBOARD

A detachable, solid-state keyboard with 78 keys provides 64 displayable characters and 32 displayable control codes, 17 function keys, and 12 editing keys.

## STANDARD CONTROLS AND EDITING FEATURES

- |                          |   |
|--------------------------|---|
| 1. 4-way cursor position | 13. Frame roll                                      |
| 2. Cursor home           | 14. 1200 baud asynchronous or 2400 baud synchronous |
| 3. Carriage return       | 15. Polled, half duplex                             |
| 4. Clear page            | 16. EIA RS 232 B or C interface                     |
| 5. Clear to end of page  | 17. 3 graphic characters                            |
| 6. Clear line            | 18. Displayed control characters                    |
| 7. Insert line           | 19. Tab positions                                   |
| 8. Delete line           | 20. Full-format control                             |
| 9. Line addressing       | 21. Protected static data on first line             |
| 10. Repeat character     | 22. Split screen                                    |
| 11. Insert character     |   |
| 12. Delete character     |   |

## COMMUNICATION INTERFACE

EIA RS 232 B or C for serial data transmission to any acoustic coupler, data set, or modem having this standard interface. Compatible with and replaces IBM 2260/2848 or 2265/2845 display terminals and controllers.

## POWER REQUIREMENTS

*POWER:* 115 volts, 60 cycles; 200 watts maximum

## PHYSICAL CHARACTERISTICS

*WEIGHT:* 120 pounds

*SIZE:* Display: 21" wide, 14" high, 22" deep

Keyboard: 21" wide, 10½" deep

Display and

Keyboard: 30¾" deep (Table space: 29¾")

\*Viewing area equivalent to 12" commercial quality T.V. tube.

# 45



MODEL 44

## CRT DATA TERMINAL SPECIFICATION DATA

Photophysics '45', Model 44, is the only interactive terminal available that combines in a single, compact unit the speed of data presentation and ease of data entry of a CRT terminal with the convenience and immediate availability of paper copy of a hard copy terminal. The 5" x 4½" copy of the display can be produced on command from the keyboard or on command from a remote computer in 5 seconds (2 seconds for additional copies of the same or different displays) for less than 1¢ per copy.

### HARD COPY OUTPUT

<b>COPY SIZE:</b>	2½" x 3½" field on 5" x 4½" paper. A standard display consisting of 12 lines of 80 alphanumeric characters will appear as 8 point capital characters on the copy.
<b>PAPER QUALITY:</b>	Paper used is inert, white, and has the qualities of bond paper. It can accept pen or pencil notes and has a life of over 20 years.
<b>PRINT QUALITY:</b>	High quality carbon black characters are produced with electrophoretic toner. Print is archival. Resolution in excess of 10 line pairs per millimeter is achieved.
<b>COPY SPEED:</b>	Initial copy is delivered 5 seconds after pressing "print" button or receipt of remote command. Additional copies of same or different display may be had at 2 second intervals.
<b>PAPER CAPACITY:</b>	A 500 ft. roll of 5" wide paper which provides 1,200 copy prints without reloading.
<b>TONER CAPACITY:</b>	1 quart
<b>ELECTROPHOTOGRAPHIC SYSTEM:</b>	A high speed electrophotographic process utilizing a large area, uniform photoconductor and associated optics provides high quality prints in ½ second exposure time. A negative of the CRT image is produced to create black characters on a white background.



## DISPLAY

<i>SCREEN SIZE:</i>	9" diagonal*	<i>CHARACTER GENERATION:</i>	5 x 7 dot matrix
<i>SCREEN TYPE:</i>	High-resolution TV Monitor	<i>REFRESH MEMORY:</i>	MOS shift register (6,720 bits)
<i>DISPLAYABLE CHARACTERS:</i>	960	<i>SCAN METHOD:</i>	Digital raster with 60 HZ refresh rate
<i>CHARACTERS PER LINE:</i>	80	<i>CODE:</i>	7 bit US ASCII
<i>NUMBER OF LINES:</i>	12	<i>CURSOR:</i>	Non-destructive, blinking
<i>CHARACTER SIZE:</i>	0.075" x 0.140" adjustable		

## KEYBOARD

A detachable, solid-state keyboard with 78 keys provides 64 displayable characters and 32 displayable control codes, 17 function keys, and 12 editing keys.

## STANDARD CONTROLS AND EDITING FEATURES

- |                          |   |
|--------------------------|---|
| 1. 4-way cursor position | 11. Delete character                                |
| 2. Cursor home           | 12. Frame roll                                      |
| 3. Carriage return       | 13. 1200 baud asynchronous or 2400 baud synchronous |
| 4. Clear page            | 14. Polled, half duplex                             |
| 5. Clear to end of page  | 15. EIA RS 232 B or C interface                     |
| 6. Clear line            | 16. Displayed control character                     |
| 7. Delete line           | 17. Tab positions                                   |
| 8. Line addressing       | 18. Full-format control                             |
| 9. Repeat character      | 19. Split screen                                    |
| 10. Insert character     |   |
- } switch selectable

## OPTIONAL CONTROLS AND EDITING FEATURES

1. Insert line

## COMMUNICATION INTERFACE

EIA RS 232 B or C for serial data transmission to any acoustic coupler, data set, or modem having this standard interface. Compatible with and replaces IBM 2260/2848 or 2265/2845 display terminals and controllers.

## POWER REQUIREMENTS

**POWER:** 115 volts, 60 cycles; 200 watts maximum

## PHYSICAL CHARACTERISTICS

**WEIGHT:** 120 pounds

**SIZE:** Display: 21" wide, 14" high, 22" deep

Keyboard: 21" wide, 10½" deep

Display and Keyboard: 30¾" deep (Table space: 29¾")

\*Viewing area equivalent to 12" commercial T.V. tube.

# 45



MODEL 24

## CRT DATA TERMINAL SPECIFICATION DATA

Photophysics '45', Model 24, is the only interactive terminal available that combines in a single, compact unit the speed of data presentation and ease of data entry of a CRT terminal with the convenience and immediate availability of paper copy of a hard copy terminal. The 5" x 4½" copy of the display can be produced on command from the keyboard or on command from a remote computer in 5 seconds (2 seconds for additional copies of the same or different displays) for less than 1¢ per copy.

### HARD COPY OUTPUT

<b>COPY SIZE:</b>	2½" x 3½" field on 5" x 4½" paper. A standard display consisting of 12 lines of 80 alphanumeric characters will appear as 8 point capital characters on the copy.
<b>PAPER QUALITY:</b>	Paper used is inert, white, and has the qualities of bond paper. It can accept pen or pencil notes and has a life of over 20 years.
<b>PRINT QUALITY:</b>	High quality carbon black characters are produced with electrophoretic toner. Print is archival. Resolution in excess of 10 line pairs per millimeter is achieved.
<b>COPY SPEED:</b>	Initial copy is delivered 5 seconds after pressing "print" button or receipt of remote command. Additional copies of same or different display may be had at 2 second intervals.
<b>PAPER CAPACITY:</b>	A 500 ft. roll of 5" wide paper which provides 1,200 copy prints without reloading.
<b>TONER CAPACITY:</b>	1 quart
<b>ELECTROPHOTOGRAPHIC SYSTEM:</b>	A high speed electrophotographic process utilizing a large area, uniform photoconductor and associated optics provides high quality prints in ½ second exposure time. A negative of the CRT image is produced to create black characters on a white background.



## DISPLAY

<i>SCREEN SIZE:</i>	9" diagonal*	<i>CHARACTER GENERATION:</i>	5 x 7 dot matrix
<i>SCREEN TYPE:</i>	High-resolution TV Monitor	<i>REFRESH MEMORY:</i>	MOS shift register (6,720 bits)
<i>DISPLAYABLE CHARACTERS:</i>	960	<i>SCAN METHOD:</i>	Digital raster with 60 HZ refresh rate
<i>CHARACTERS PER LINE:</i>	80	<i>CODE:</i>	7 bit US ASCII
<i>NUMBER OF LINES:</i>	12	<i>CURSOR:</i>	Non-destructive, blinking
<i>CHARACTER SIZE:</i>	0.075" x 0.140" adjustable		

## KEYBOARD

A detachable, solid-state keyboard with 78 keys provides 64 displayable characters and 32 displayable control codes, 17 function keys, and 12 editing keys.

## STANDARD CONTROLS AND EDITING FEATURES

- |                          |                                   |
|--------------------------|-----------------------------------|
| 1. 4-way cursor position | 10. Delete character              |
| 2. Cursor home           | 11. Frame roll                    |
| 3. Carriage return       | 12. 110, 150, 300, 600, 1200 baud |
| 4. Line feed             | 13. Half or full duplex           |
| 5. Clear page            | 14. EIA RS 232 B or C interface   |
| 6. Clear line            | 15. Displayed control characters  |
| 7. Delete line           | 16. Semi-format control           |
| 8. Repeat character      | 17. Block message transmit        |
| 9. Insert character      | 18. Split screen                  |

## OPTIONAL CONTROLS AND EDITING FEATURES

1. Insert line
2. Parity checking

## COMMUNICATION INTERFACE

EIA RS 232 B or C for serial data transmission to any acoustic coupler, data set, or modem having this standard interface. Compatible with ASR 33 or 35 teletype.

## POWER REQUIREMENTS

*POWER:* 115 volts, 60 cycles; 200 watts maximum

## PHYSICAL CHARACTERISTICS

*WEIGHT:* 120 pounds

*SIZE:* Display: 21" wide, 14" high, 22" deep

Keyboard: 21" wide, 10½" deep

Display and Keyboard: 30¾" deep (Table space: 29¾")

\*Viewing area equivalent to 12" commercial quality T.V. tube.

# 45



## CRT DATA TERMINAL SPECIFICATION DATA

MODEL 60

Photophysics '45', Model 60, is the desk top CRT data terminal with a CRT display and solid state keyboard. It is part of the first truly modular interactive terminal line, the Photophysics '45' series of display and keyboard, display and copier and display and keyboard with integral copier terminals. It is compatible with Teletype ASR 33 or 35.

### DISPLAY

<b>SCREEN SIZE:</b>	9" diagonal*	<b>CHARACTER GENERATION:</b>	5 x 7 dot matrix
<b>SCREEN TYPE:</b>	High-resolution TV Monitor	<b>REFRESH MEMORY:</b>	MOS shift register (8,000 bits)
<b>DISPLAYABLE CHARACTERS:</b>	1,000	<b>SCAN METHOD:</b>	Digital raster with 60 HZ refresh rate
<b>CHARACTERS PER LINE:</b>	40	<b>CODE:</b>	7 bit US ASCII
<b>NUMBER OF LINES:</b>	25	<b>CURSOR:</b>	Non-destructive, blinking
<b>CHARACTER SIZE:</b>	0.125" x 0.150" adjustable		

### KEYBOARD

A detachable, solid-state keyboard with 78 keys provides 64 displayable characters and 32 displayable control codes, 17 function keys, and 12 editing keys.

\*Viewing area equivalent to 12" commercial T.V. tube.

## STANDARD CONTROLS AND EDITING FEATURES

- |                                 |                                   |                        |
|---------------------------------|-----------------------------------|------------------------|
| 1. Protected data on first line | 12. Insert character              |                        |
| 2. 4-way cursor position        | 13. Delete character              |                        |
| 3. Cursor Home                  | 14. Frame roll                    |                        |
| 4. Carriage return              | 15. 110, 150, 300, 600, 1200 baud | } switch<br>selectable |
| 5. Line feed                    | 16. Half or full duplex           |                        |
| 6. Clear page                   | 17. EIA RS 232 B or C interface   |                        |
| 7. Clear line                   | 18. Semi-format control           |                        |
| 8. Insert line                  | 19. 3 graphic characters          |                        |
| 9. Delete line                  | 20. Displayed control characters  |                        |
| 10. Recall line                 | 21. Block message transmit        |                        |
| 11. Repeat character            | 22. Split screen                  |                        |

## OPTIONAL CONTROLS AND EDITING FEATURES

1. Parity checking

## COMMUNICATION INTERFACE

EIA RS 232 B or C for serial data transmission to any acoustic coupler, data set, or modem having this standard interface. Compatible with ASR 33 or 35 teletype.

## POWER REQUIREMENTS

**POWER:** 115 volts, 60 cycles; 150 watts maximum

## PHYSICAL CHARACTERISTICS

**WEIGHT:** 45 pounds

**SIZE:** Display: 12" wide, 14" high, 20½" deep  
Keyboard: 16½" wide and 10½" deep  
Display and Keyboard: 29¾" deep (Table space: 28½")



# 45



MODEL 20

## CRT DATA TERMINAL SPECIFICATION DATA

Photophysics '45', Model 20, is the only interactive terminal available that combines in a single, compact unit the speed of data presentation and ease of data entry of a CRT terminal with the convenience and immediate availability of paper copy of a hard copy terminal. The 5" x 4½" copy of the display can be produced on command from the keyboard or on command from a remote computer in 5 seconds (2 seconds for additional copies of the same or different displays) for less than 1¢ per copy.

### HARD COPY OUTPUT

<b>COPY SIZE:</b>	2½" x 3½" field on 5" x 4½" paper. A standard display consisting of 25 lines of 40 alphanumeric characters will appear as 10 point capital characters on the copy.
<b>PAPER QUALITY:</b>	Paper used is inert, white, and has the qualities of bond paper. It can accept pen or pencil notes and has a life of over 20 years.
<b>PRINT QUALITY:</b>	High quality carbon black characters are produced with electrophoretic toner. Print is archival. Resolution in excess of 10 line pairs per millimeter is achieved.
<b>COPY SPEED:</b>	Initial copy is delivered 5 seconds after pressing "print" button or receipt of remote command. Additional copies of same or different display may be had at 2 second intervals.
<b>PAPER CAPACITY:</b>	A 500 ft. roll of 5" wide paper which provides 1,200 copy prints without reloading.
<b>TONER CAPACITY:</b>	1 quart
<b>ELECTROPHOTOGRAPHIC SYSTEM:</b>	A high speed electrophotographic process utilizing a large area, uniform photoconductor and associated optics provides high quality prints in ½ second exposure time. A negative of the CRT image is produced to create black characters on a white background.



## DISPLAY

SCREEN SIZE:	9" diagonal*	CHARACTER GENERATION:	5 x 7 dot matrix
SCREEN TYPE:	High-resolution TV Monitor	REFRESH MEMORY:	MOS shift register (8,000 bits)
DISPLAYABLE CHARACTERS:	1,000	SCAN METHOD:	Digital raster with 60 HZ refresh rate
CHARACTERS PER LINE:	40	CODE:	7 bit US ASCII
NUMBER OF LINES:	25	CURSOR:	Non-destructive, blinking
CHARACTER SIZE:	0.125" x 0.15" adjustable		

## KEYBOARD

A detachable, solid-state keyboard with 78 keys provides 64 displayable characters and 32 displayable control codes, 17 function keys, and 12 editing keys.

## STANDARD CONTROLS AND EDITING FEATURES

- |                                 |                                   |
|---------------------------------|-----------------------------------|
| 1. Protected data on first line | 12. Insert character              |
| 2. 4-way cursor position        | 13. Delete character              |
| 3. Cursor Home                  | 14. Frame roll                    |
| 4. Carriage return              | 15. 110, 150, 300, 600, 1200 baud |
| 5. Line feed                    | 16. Half or full duplex           |
| 6. Clear page                   | 17. EIA RS 232 B or C interface   |
| 7. Clear line                   | 18. Semi-format control           |
| 8. Insert line                  | 19. 3 graphic characters          |
| 9. Delete line                  | 20. Displayed control characters  |
| 10. Recall line                 | 21. Block message transmit        |
| 11. Repeat character            | 22. Split screen                  |

## OPTIONAL CONTROLS AND EDITING FEATURES

1. Parity checking

## COMMUNICATION INTERFACE

EIA RS 232 B or C for serial data transmission to any acoustic coupler, data set, or modem having this standard interface. Compatible with ASR 33 or 35 teletype.

## POWER REQUIREMENTS

POWER: 115 volts, 60 cycles; 200 watts maximum

## PHYSICAL CHARACTERISTICS

WEIGHT: 120 pounds

SIZE: Display: 21" wide, 14" high, 22" deep

Keyboard: 21" wide, 10½" deep

Display and Keyboard: 30¾" deep (Table space: 29¾")

\*Viewing area equivalent to 12" commercial quality T.V. tube.

# 45



## CRT DATA TERMINAL SPECIFICATION DATA

MODEL 84

Photophysics '45', Model 84, is the desk top CRT data terminal with a CRT display and solid state keyboard. It is part of the first truly modular interactive terminal line, the Photophysics '45' series of display and keyboard, display and copier and display and keyboard with integral copier terminals. It is compatible with IBM 2260 or 2265 terminals.

### DISPLAY

<i>SCREEN SIZE:</i>	9" diagonal*	<i>CHARACTER GENERATION:</i>	5 x 7 dot matrix
<i>SCREEN TYPE:</i>	High-resolution TV Monitor	<i>REFRESH MEMORY:</i>	MOS shift register (6,720 bits)
<i>DISPLAYABLE CHARACTERS:</i>	960	<i>SCAN METHOD:</i>	Digital raster with 60 HZ refresh rate
<i>CHARACTERS PER LINE:</i>	80	<i>CODE:</i>	7 bit US ASCII
<i>NUMBER OF LINES:</i>	12	<i>CURSOR:</i>	Non-destructive, blinking
<i>CHARACTER SIZE:</i>	0.075" x 0.140" adjustable		

### KEYBOARD

A detachable, solid-state keyboard with 78 keys provides 64 displayable characters and 32 displayable control codes, 17 function keys, and 12 editing keys.

\*Viewing area equivalent to 12" commercial T.V. tube.

## STANDARD CONTROLS AND EDITING FEATURES

- |                          |                                 |                        |
|--------------------------|---------------------------------|------------------------|
| 1. 4-way cursor position | 11. Delete character            |                        |
| 2. Cursor home           | 12. Frame roll                  |                        |
| 3. Carriage return       | 13. 1200 baud asynchronous or   | } switch<br>selectable |
| 4. Clear page            | 2400 baud synchronous           |                        |
| 5. Clear to end of page  | 14. Polled, half duplex         |                        |
| 6. Clear line            | 15. EIA RS 232 B or C interface |                        |
| 7. Delete line           | 16. Displayed control character |                        |
| 8. Line addressing       | 17. Tab positions               |                        |
| 9. Repeat character      | 18. Full-format control         |                        |
| 10. Insert character     | 19. Split screen                |                        |

## OPTIONAL CONTROLS AND EDITING FEATURES

1. Insert line

## COMMUNICATION INTERFACE

EIA RS 232 B or C for serial data transmission to any acoustic coupler, data set, or modem having this standard interface. Compatible with and replaces IBM 2260/2848 or 2265/2845 display terminals and controllers.

## POWER REQUIREMENTS

**POWER:** 115 volts, 60 cycles; 150 watts maximum

## PHYSICAL CHARACTERISTICS

**WEIGHT:** 45 pounds

**SIZE:**

Display:	12" wide, 14" high, 20½" deep
Keyboard:	16½" wide and 10½" deep
Display and Keyboard:	29¾" deep (Table space: 28½")



PHOTOPHYSICS 

# 45



MODEL 01

## **CRT DATA TERMINAL SPECIFICATION DATA**

Photophysics '45', Model 01, Copier utilizes the unique Quantafax™ (patent pending) electrophotographic, high speed, hard copy process developed by Photophysics to provide a high speed display copier in a single, compact unit. A display image can be recorded on paper in 5 seconds (2 seconds for additional copies of the same or different image). The Photophysics '45', Model 01, offers copy of either continuous tone images or alphanumeric information. The Model 01 can be dedicated to a single keyboard/display or T.V. monitor or shared by up to 16 keyboard/displays or T.V. monitors.

### COPY CHARACTERISTICS

**COPY SIZE:** 2½" x 3½" field on 5" x 4½" paper.

**PAPER QUALITY:** Paper used is inert, white, and has the qualities of bond paper. It can accept pen or pencil notes and has a life of over 20 years.

**PRINT QUALITY:** Electrophoretic toner is used to obtain high quality carbon black characters of alphanumeric displays as well as continuous tone reproduction of TV images. Print is archival. Resolution in excess of 10 line pairs per millimeter is achieved.

### COPY SPEED

**INITIAL COPY:** 5 seconds after pressing "print" button.

**ADDITIONAL COPIES:** At 2 second intervals, additional copies of the same or different image may be produced.

**PHOTOPHYSICS, INC.** • 1601 Stierlin Road, Mountain View, California 94040 • (415) 969-9500

## PAPER AND TONER CAPACITY

*PAPER:* A 500 ft. roll of 5" wide paper provides 1,200 prints without reloading.

*TONER CAPACITY:* 1 quart

## ELECTROPHOTOGRAPHIC SYSTEM

A high speed electrophotographic process utilizing a large area, uniform photoconductor and associated optics provides high quality prints in very short exposure times. A negative of the CRT image is produced to create black characters on a white background.

## INTERFACE

EIA RS 170 or other video or optical sources

## PACKAGING

As pictured or to order

## POWER AND PHYSICAL CHARACTERISTICS

*POWER:* 115 volts, 60 cycles, 120 watts

*WEIGHT:* 70 pounds

*SIZE:* 12" wide, 14" high, 32¾" deep (Table space: 29¼")

# 45



## CRT DATA TERMINAL SPECIFICATION DATA

MODEL 80

Photophysics '45', Model 80, is the desk top CRT data terminal with a CRT display and solid state keyboard. It is part of the first truly modular interactive terminal line, the Photophysics '45' series of display and keyboard, display and copier and display and keyboard with integral copier terminals. It is compatible with IBM 2260 or 2265 terminals.

### DISPLAY

<b>SCREEN SIZE:</b>	9" diagonal*	<b>CHARACTER GENERATION:</b>	5 x 7 dot matrix
<b>SCREEN TYPE:</b>	High-resolution TV Monitor	<b>REFRESH MEMORY:</b>	MOS shift register (8,000 bits)
<b>DISPLAYABLE CHARACTERS:</b>	1,000	<b>SCAN METHOD:</b>	Digital raster with 60 HZ refresh rate
<b>CHARACTERS PER LINE:</b>	40	<b>CODE:</b>	7 bit US ASCII
<b>NUMBER OF LINES:</b>	25	<b>CURSOR:</b>	Non-destructive, blinking
<b>CHARACTER SIZE:</b>	0.125" x 0.150" adjustable		

### KEYBOARD

A detachable, solid-state keyboard with 78 keys provides 64 displayable characters and 32 displayable control codes, 17 function keys, and 12 editing keys.

\*Viewing area equivalent to 12" commercial T.V. tube.



## STANDARD CONTROLS AND EDITING FEATURES

- |                          |   |                        |
|--------------------------|---|------------------------|
| 1. 4-way cursor position | 13. Frame roll                          |                        |
| 2. Cursor home           | 14. 1200 baud asynchronous or           | } switch<br>selectable |
| 3. Carriage return       | 2400 baud synchronous                   |                        |
| 4. Clear page            | 15. Polled, half duplex                 |                        |
| 5. Clear to end of page  | 16. EIA RS 232 B or C interface         |                        |
| 6. Clear line            | 17. 3 graphic characters                |                        |
| 7. Insert line           | 18. Displayed control characters        |                        |
| 8. Delete line           | 19. Tab positions                       |                        |
| 9. Line addressing       | 20. Full-format control                 |                        |
| 10. Repeat character     | 21. Protected static data on first line |                        |
| 11. Insert character     | 22. Split screen                        |                        |
| 12. Delete character     |   |                        |

## COMMUNICATION INTERFACE

EIA RS 232 B or C for serial data transmission to any acoustic coupler, data set, or modem having this standard interface. Compatible with and replaces IBM 2260/2848 or 2265/2845 display terminals and controllers.

## POWER REQUIREMENTS

**POWER:** 115 volts, 60 cycles; 150 watts maximum

## PHYSICAL CHARACTERISTICS

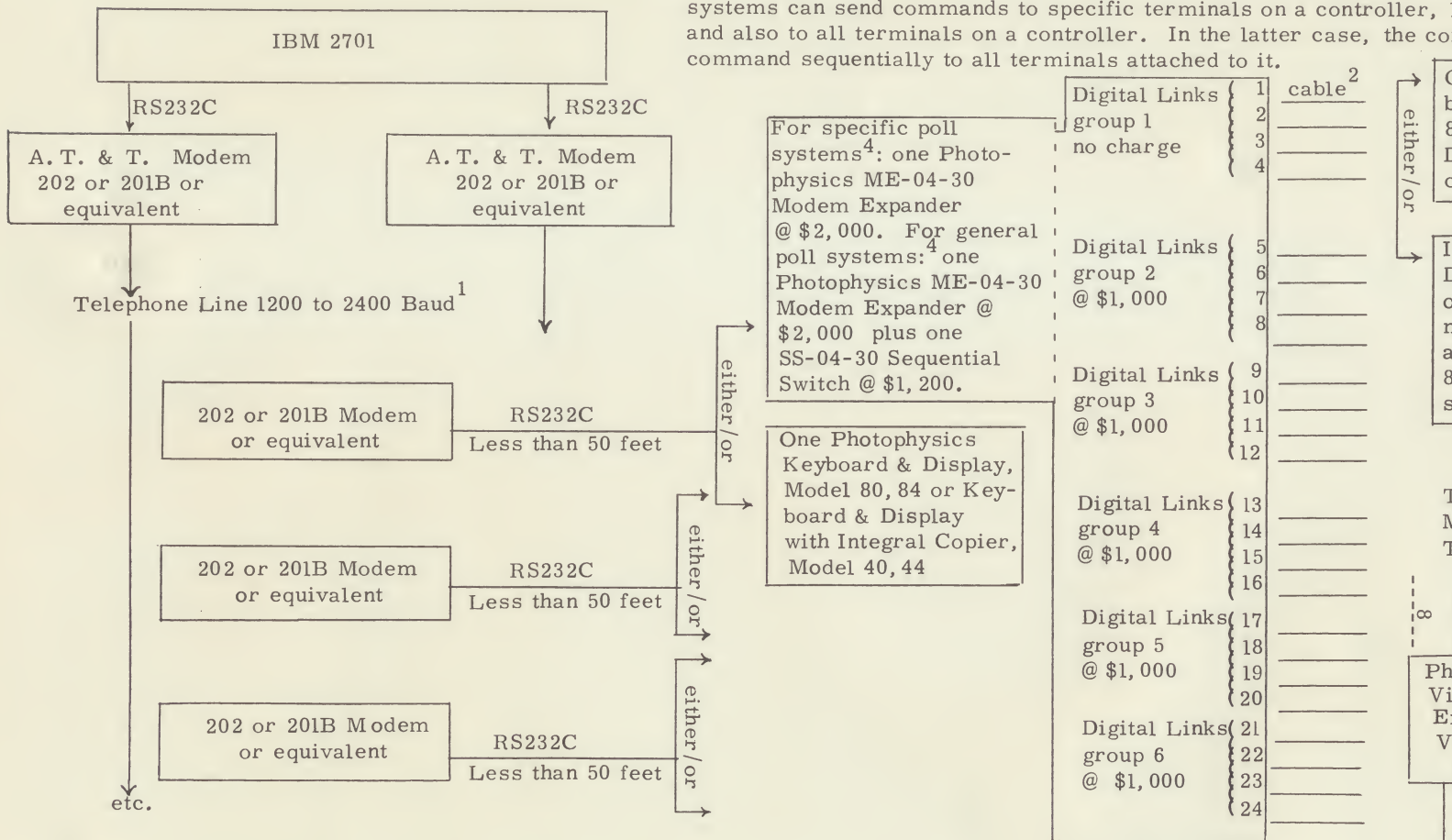
**WEIGHT:** 45 pounds

**SIZE:**

Display:	12" wide, 14" high, 20½" deep
Keyboard:	16½" wide and 10½" deep
Display and Keyboard:	29¾" deep (Table space: 28½")

CONFIGURATOR for IBM Compatible Models of Photophysics '45' Series of Display Terminals & Display Copiers. Compatible with and replace IBM 2848/2260 combination and IBM 2845/2265 combination.

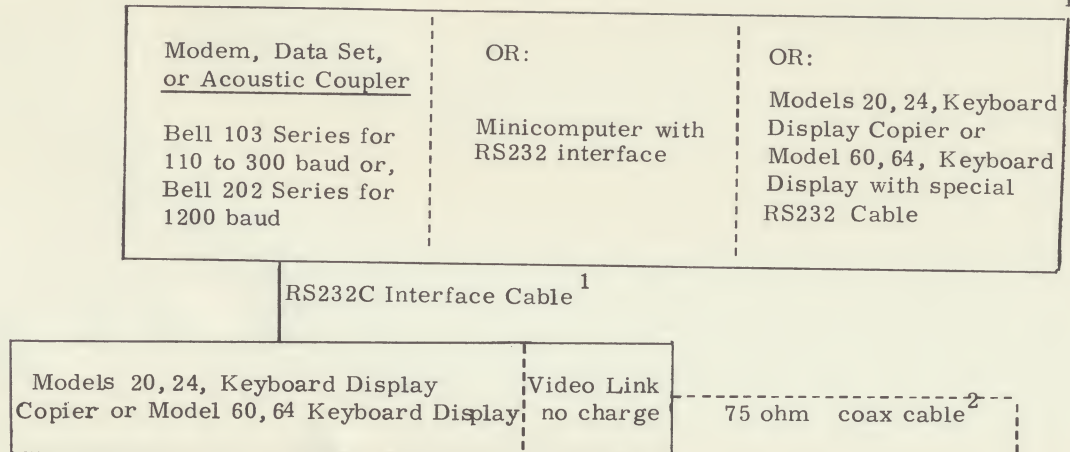
- (1) If more than one modem is on the telephone line, it is a multidrop 1 to-point line.
- (2) Twelve wire, noise-free, light-link cable with connectors on each end required at an additional charge of \$300 if length is over 2,000 ft. 11 wire cable for specific poll, 11 wire cable for general poll (9 or 10).
- (3) \$1.00 per foot. Boosters required at an additional charge of \$300 if
- (4) Specific poll systems send commands to specific terminals on a controller, systems can send commands to specific terminals on a controller, and also to all terminals on a controller. In the latter case, the command sequentially to all terminals attached to it.



CONFIGURATOR for Teletype Compatible  
Models of Photophysics '45' Series of  
Display Terminals and Display Copiers.

Compatible with and replace Teletype  
Model 33/35 or other USASCII coded  
alphanumeric terminals having  
RS232C interface.

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PRODUCT SUMMARY  
 PHOTOPHYSICS  
 FORTY-FIVE SERIES  
 OF DISPLAY TERMINALS

Compatible with and replaces  
 IBM 2848/2260 combination  
 and IBM 2845/2265 combination

Compatible with a  
 Teletype ASR 33

	40 characters by 25 lines	80 characters by 12 lines	40 characters by 25 lines	80 characters by 12 lines
Keyboard, Display & Integral Copier 9" diagonal screen can be copied in 2 to 5 sec. for less than 1¢ per copy on archival quality paper. 78 keys and full cursor control.	Model 40 \$5,500 to \$8,900 depending on quantity <sup>1</sup>	Model 44 \$5,500 to \$8,900 depending on quantity <sup>1</sup>	Model 20 \$5,000 to \$8,000 depending on quantity <sup>1</sup>	Model 24 \$5,000 to \$8,000 depending on quantity <sup>1</sup>
Keyboard & Display 9" diagonal display, 78 keys, full cursor control	Model 80 \$2,800 to \$4,650 depending on quantity. \$117 to \$172/mo. depending on quantity & length of lease <sup>1</sup>	Model 84 \$2,800 to \$4,650 depending on quantity. \$117 to \$172/mo. depending on quantity & length of lease <sup>1</sup>	Model 60 \$2,580 to \$4,100 depending on quantity <sup>1</sup>	Model 64 \$2,580 to \$4,100 depending on quantity <sup>1</sup>
Display & Integral Copier 9" diagonal display can be copied in 2 to 5 sec. for less than 1¢ per copy on archival quality paper				
Copier (for Displays). Any display up to 2000 characters can be copied in 2 to 5 sec. for less than 1¢ per copy on archival quality paper.				

1. Plus maintenance

## PHOTOPHYSICS '45' SERIES OF DISPLAY TERMINALS - CUSTOMER PRICE LIST

Model	Description	Lease Price *			Maintenance Charges <sup>(1)</sup> (per month)	Unit Price	Pur
		12 mo. Lease <sup>(2)</sup>	36 mo. Lease <sup>(2)</sup>	60 mo. Lease <sup>(2)</sup>			
01	Copier (for 2 to 8 Keyboard/Displays)	(4)	\$120	\$ 80	\$30	\$3,500	\$ 2,
10	Display/Copier (for 2 to 8 Keyboard/Displays)	(4)	125	85	30	3,650	3,
	<u>Keyboard/Display/Copier</u>						
20	TTY ASR 33,35 Compat., 40 Char X 25 Lines	(4)	275	188	30	8,000	6,
24	TTY ASR 33,35 Compat., 80 Char X 12 Lines	(4)	275	188	30	8,000	6,
40	IBM 2260, 2265 Compat., 40 Char X 25 Lines	(4)	306	209	30	8,900	7,
44	IBM 2260, 2265 Compat., 80 Char X 12 Lines	(4)	306	209	30	8,900	7,
	<u>Keyboard/Display</u>						
60	TTY ASR 33,35 Compat., 40 Char X 25 Lines	(4)	141	96	20	4,100	3,
64	TTY ASR 33,35 Compat., 80 Char X 12 Lines	(4)	141	96	20	4,100	3,
80	IBM 2260, 2265 Compat., 40 Char X 25 Lines	(4)	172	117	20	4,650	3,
84	IBM 2260, 2265 Compat., 80 Char X 12 Lines	(4)	172	117	20	4,650	3,
	<u>ME-04-30 Modem Expander</u>	(4)	60	40	6	2,000	(1) M
	<u>SS-04-30 Sequential Switch</u>	(4)	50	35	4	1,000	by H
	<u>Additional Digital Links on Modem Expander</u> (for 5 to 24 terminals per modem) per group of four.	(4)	50	35	5	1,000	tena
	<u>VS-04-30 Video Switch (for sharing one model</u> 01 or 10 among 2 to 4 terminals)	(4)	60	40	6	2,000	ion t
	<u>VS-08-30 Video Switch Expansion (for sharing</u> one model 01 or 10 among an additional 1 to 4 terminals)	(4)	50	35	5	1,000	pric
	<u>Quantafox<sup>TM</sup> white paper</u> 4 each 500 foot rolls per box					38.40	(2) R
	<u>Quantafox<sup>TM</sup> toner</u> 1 pint					1.10	purc

\*All lease prices are dependent upon quantity and length of contract. These rates are merely representative and the customer should apply directly to Photophysics for specific rates for specific quantities.

All prices are FOB , Textron's Oregon Technical Products Corporation, Grants Pass, Oregon. Terms: Net 30 Days. Manufacturing integrity guaranteed by Textron's Oregon Technical Products Corporation. Prices and specifications are subject to change.

PHOTOPHYSICS



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